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PROTECTING HOME GARDENS AND SMALL FRUITS FROM ATTACK BY BIRDS

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Contents

	Page		Page
Introduction	1	Methods useful in preventing bird attack--continued.	
Birds most commonly involved	2	Trapping	5
Legal status of the birds .	2	Chemical repellents . . .	7
Methods useful in preventing bird attack	3	Frightening devices. . . .	8
Covering plants or trees	3	Additional suggestions . .	10
Removing resting places	3	Poisoning	11
Destroying nests	4	Comments	11
Economizing on poultry feeds	4	Controlling injurious animals	12
Shooting	4	Publications on control of injurious birds. . . .	13

INTRODUCTION

Because of food shortage resulting from war conditions, a national campaign has been organized to promote home gardening under the name of Victory Gardening, and small garden plots are being planted in backyards and vacant lots even in the large cities. In a few areas, bird damage to gardens is reported by agricultural agencies to exceed all other forms of damage combined.

This leaflet offers suggestions for protecting gardens from a number of the more widely distributed and abundant birds that may become locally destructive. The discussion is according to methods and not by bird species, and it is left to the ingenuity of the gardener to adapt the methods to his own problems. A means useful in preventing damage in one location is not always effective in another even with the same species of bird.

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BIRDS MOST COMMONLY INVOLVED

Only a few species of birds damage gardens and small fruits, and these to greatly varying degrees. English sparrows frequently attack seeds, young plants, and ripening vegetable and fruit crops, and as they are common even in the largest cities, losses due to their attacks are widespread. On the Pacific coast and in Arizona three kinds of native sparrows may cause damage to gardens by eating young plants. These are Nuttall's sparrow, which nests along the coast from Santa Barbara, Calif., northward and in winter has its numbers multiplied by birds from the north, and Gambel's and the golden-crowned sparrows which also winter in large numbers in California and Arizona, and may cause severe damage to early gardens until they migrate northward late in April or early in May.

The house finch, or linnet, is so abundant in California that home plantings of small fruits are jeopardized by their eating the buds in winter and the ripening fruit in summer. Its near-relative, the purple finch, both of the Northeast and of the western mountains, occasionally destroys buds in winter. The European starling, now abundant throughout much of the eastern half of the country, may become injurious to small fruits. Wherever locally abundant, the robin, catbird, brown thrasher, cedar waxwing, and blue jay also may attack such fruits. Blue jays, grackles in the East and South, and Brewer's blackbirds in the West, may cause local damage to garden plantings; vagrant domestic pigeons may become a local problem in cities and in rural and suburban areas; and pheasants and quails occasionally eat seeds, plantlets, or small fruits. The meadowlark may become troublesome to newly planted corn along the south Atlantic coast, and to corn and peas on the Pacific coast.

Damage to seed may occur at any time after planting; that to young plants begins when the first leaves break through the surface of the ground and generally lasts only a short time. Some plants, however, such as beans and peas, are much liked by birds, and damage may continue until the plants are about four inches high. Buds of deciduous fruit trees may be eaten by house finches or purple finches between September and blossoming time in the spring. Green small fruits are rarely eaten, but birds may begin upon them as soon as they start to ripen and continue to eat them until the crop is gone.

LEGAL STATUS OF THE BIRDS

Treaties protecting migratory birds have been made by this country with both Canada and Mexico. Under the Migratory Birds Treaty Act of 1918 the enforcement of the regulations is delegated to the Fish and Wildlife Service. Under this act most of our migratory birds are protected and can be killed only during certain specified open shooting seasons or under special permit. Of all birds mentioned in this leaflet, only the English sparrow, blue jay, starling, and crow are unprotected by Federal law.

Where the extent of damage justifies, the Fish and Wildlife Service, through proper field representatives, may issue permits authorizing the killing of injurious species; in applying for such permit, it should be shown that other less destructive methods have proved inadequate. In California, county agricultural commissioners are authorized to direct the control of several of the more injurious species; gardeners in that State should consult their local commissioner concerning the possibilities.

State game laws cover the protection of birds found within each State. Investigate the game laws of your State before taking any action that will result in killing birds. Domestic pigeons usually are not protected by the State laws, but may be protected by municipal ordinance, and killing them might result in a civil suit by their owner.

METHODS USEFUL IN PREVENTING BIRD ATTACK

Covering Plants or Trees

The only certain method of protection is to cover the garden or the fruit trees, so that birds cannot reach the plants or fruit. In gardens many types of cover can be used, depending on the area and the weather during the early growing period. Where damage is to the seed before it appears above ground, a 1-foot strip of cheese-cloth or even of building paper can be laid over the planted row and weighted or staked down. For damage after the plants appear at the surface of the ground, covers must be upon frames at least six inches high in order to permit the plant to grow beyond the stage where it may be injured. Light wooden frames of whatever size and shape is best suited to the individual garden may be covered with cheesecloth, mosquito netting, or small-mesh netting such as is used for seines. Screen wire, hardware cloth, or poultry wire of not larger than 3/4-inch mesh, if available, also may be used.

Vine or bush fruits or small trees may be covered with the same materials. The covers may be merely draped over the plant so as to reach the ground or may be tied in about the base. A framework may be constructed upon which the cover can be spread. The writer has seen very large sweet cherry trees completely enclosed in chicken wire cages stretched upon a gaspipe framework. Although the original cost was high, this cage offered permanent protection for many years at a very low prorated annual cost.

Removing Resting Places

English sparrows, several troublesome native sparrows, towhees, and certain other birds that may damage home gardens prefer to feed close to cover into which they may dart to escape enemies. Hence, damage can be greatly reduced by planting the garden as far as possible from dense weeds or shrubbery and removing all nearby piles of brush, wood, old fence wire, or other rubbish that may have accumulated.

Destroying Nests

Destroying the nests and eggs of protected species of birds is as much a violation of the law as is killing the adult bird; nests of the unprotected species may be destroyed whenever found. In an area in which the English sparrow is troublesome, no nest of these birds should be allowed to produce young; a program of continual nest destruction will do much to discourage the birds and cause them to move elsewhere, as well as to prevent the normal rate of increase in their numbers. If conducted on a neighborhood basis such a program may well-nigh eliminate damage locally.

Economizing on Poultry Feeds

In rural or suburban districts where poultry is commonly raised, the feed if often placed in self-feeders, more feed is scattered than the poultry can clean up at once, or the feed-room is left open to birds. Numbers of birds are attracted to this food and may remain to attack garden or fruits. Birdproof the feed room and keep the door closed so that sparrows cannot enter it to eat at will; spread for the poultry only as much feed as they can clean up within a short time, and do not use self-feeders during the period when the garden plants are small and easily damaged by the birds that are attracted to the poultry feed.

Shooting

In controlling birds by shooting, safety to man and domestic stock must be given first consideration. Do not endanger the lives of neighbors or their property by ill-advised shooting. Familiarize yourself with State game laws and local ordinances relative to the use of firearms. Learn which birds can legally be shot and those that may be shot only under permit.

At short distances the .22 caliber, shot cartridge in a smooth-bore rifle is an effective and relatively safe means of killing sparrows in sheds, poultry houses, under eaves, or in shrubbery, as the shot loads do little damage to the buildings. These loads cannot be depended on to kill sparrows at more than 40 to 50 feet.

In the rural districts or in suburban areas where houses and other buildings are not too close together, a small gage shotgun can be used effectively. Sparrows or linnets can be baited onto places where it is safe to shoot and often several birds can be killed at one shot. However, the cost of shotgun ammunition makes the killing of single birds too expensive except in the case of the larger or more wary species. Rifles (even the .22 caliber) using ball ammunition, should never be used in bird control in or about the "Victory Garden".

Trapping

Trapping is an effective means of reducing local populations of English Gambel's, Nuttall's, and golden-crowned sparrows, house finches, purple finches, vagrant domestic pigeons, and some other species. Of these, the English sparrow is the only one that can legally be trapped without first obtaining the proper permits. Trapping requires constant attention, for without proper management of the traps, little success can be expected. Several types of trap may be used. Some are described here; others have been illustrated in earlier publications of this Service, to which reference is made herein. Second-hand or waste materials may be used in constructing the traps when new materials are not available. Trapping is most effective when food is scarce, least so when food is abundant. Trapping should begin several days before damage to gardens is expected, and in the case of the English sparrow, a year-long resident, unprotected, species, trapping throughout the year will assist in reducing damage.

Mouse Traps

When there are only a few sparrows, linnets, or purple finches to be removed, the common snap trap can be used effectively. For sparrows, bait the treadle with a few grains of wheat or milo, or a small piece of bread; for linnets or purple finches use grain, bread, or a small piece of apple. Although the bird is usually caught by the head and killed instantly, the trap should be tied in position with a short piece of cord. The baited trap may be set wherever the birds are accustomed to feed, but should be inaccessible to domestic chickens or pigeons.

Sieve Traps

To make a sieve trap, cover a wooden frame 3 feet square and 6 inches deep with screen wire or ½-inch-mesh hardware cloth. A small door made in one corner will permit the trapped birds to be removed into a bag or small cage for disposal. When set, one edge of this trap is supported about 18 inches from the ground by a stick, and the trap is sprung by pulling a cord attached to the stick. The free end of the cord may run to some convenient vantage point. Grain, bread, or other acceptable bait should be placed under the center of the trap.

This type of trap may be used effectively against English sparrows, the few troublesome native sparrows, house finches, purple finches, and to some extent against starlings, grackles, blackbirds, and vagrant pigeons.

Nest-box Traps

Nest-box traps may be either automatic or hand-operated, and are often extremely effective in reducing the local population of English sparrows. They are simple to make, and are particularly valuable in that their period of greatest effectiveness is late in winter and early in spring when the sparrows begin to investigate nesting sites at about the same time that they may become a nuisance in the garden. Plans for building a nest-box trap will be found in Wildlife Leaflet 259, Two Home-made Traps for English Sparrows, included in the list of publications on page 12.

Funnel Traps

The principle of the funnel trap is simple. Decoyed by bait scattered before and inside the trap, the birds are induced to enter through a half funnel entrance. A second chamber is entered by passing through a complete funnel, and a door into this chamber permits removal of the birds. The funnel type of trap may be readily constructed by anyone handy with tools. Plans for its construction will be found in Wildlife Leaflet 259, Two Home-made Traps for English Sparrows, included in the list of publications on page 12. Made from 3/4-inch-mesh galvanized poultry wire, this trap is very effective in catching English sparrows. Made of 1/2-inch-mesh hardware cloth, or even of screen wire, upon a light wooden frame, this trap will readily catch the Gambel's, Nuttall's, and golden-crowned sparrows.

Poultry Feed-pen Trap

Where poultry and gardens are an annual or continuous attraction to troublesome birds, a permanent trap can be constructed. Erect a substantial framework from 6 to 10 feet square, and 6 feet high. Cover the entire cage with 3/4-inch-mesh poultry wire except a strip about 1 foot wide next the ground on one side or end. A door should be made in the cage to permit entrance by the operator. Hinge a 1-inch by 12-inch board to the framework of the cage, where the opening was left, so that when it falls of its own weight it closes the opening.

In operation, the drop-board is held up by means of a heavy cord or wire running to some point from which the cage can be easily watched. Feed poultry within the cage. As soon as the sparrows become accustomed to the feeding schedule, they will gather from the adjacent neighborhood, wait until the poultry has fed and left the cage, and then enter the feeding pen. By suddenly loosing the cord or wire controlling the board closing the opening, numbers of sparrows may be caught at one time. The operator may capture the trapped sparrows by means of a small net, or may kill them with a stick or broom.

Australian Crow Trap

Modifications of the Australian crow trap are useful in capturing crows, ravens, magpies, starlings, grackles, and blackbirds. Crows, ravens, and magpies are not likely to trouble so-called "Victory Gardens" but may attack rural truck gardens or poultry. The construction and operation of this trap is described in the leaflets on these species listed herein.

Chemical Repellents

Repellents to Protect Seed

Victory gardens and small home vegetable gardens are not often frequented by the species of birds that dig up the planted seed before it sprouts, although this type of damage may occur in rural gardens, especially those located some distance from dwellings. Crows, pheasants, and meadowlarks and occasionally other birds may commit such depredations.

Some commercial seed disinfectants, with mercury as their basis, have proved effective in discouraging meadowlarks from digging up seed peas in several commercial plantings in California. Coal tar has been used successfully as a repellent on corn. Use it in the proportion of a tablespoonful to a half bushel of seed corn. Warm the coal tar and the seed corn to about 80° Fahrenheit. In summer the sun's heat usually is sufficient. Stir the seed until all kernels are coated with tar, then spread out to dry. The seed is considerably darkened in color, which may play some part in the distaste with which it is viewed by the birds.

A number of commercially manufactured repellents for use on seed are on the market, and most of those that are derivatives of coal tar have proved effective.

Red lead has been used in Europe, and to a limited extent, in America for preventing bird attack on seed. The seed is moistened with a thin glue or mucilage, and the red lead dusted on until the seed is well colored; then it is spread out to dry. Presumably color is the deterrent factor.

Kerosene, crude petroleum, copperas, fish oil, spirits of camphor, turpentine emulsion, and numerous other substances have from time to time been reported as repellents, but tests at various state experiment stations indicate that all of these, when used at strengths necessary to repel birds, may greatly reduce germination.

Repellents on Young Plants

Normally attacks upon young garden plants may be serious only where English sparrows, the native sparrows herein listed, grackles, or blackbirds are numerous. Damage begins with the appearance of the first leaves above the surface of the ground, and usually does not last more than 10 days to two weeks, though in some instances the attack may continue

until the plants are at least four inches high. The tender nature of the plants at this stage greatly reduces the number of repellents that may safely be used.

In California Gambel's sparrows were stopped from destroying the marginal rows in a commercial vegetable planting by whitening the surface of the ground with lime. In other instances similar results were reported from sprinkling flowers of sulfur upon the ground until the surface was yellow. Cultivation, rainfall, or irrigation may make it necessary to repeat the treatment.

Nicotine sulfate used as a nicotine-soap spray as directed by the manufacturers was of some value in preventing bird attack upon such ornamental berries as Pyracantha and Cotoneaster in winter; it should have similar value in protecting small plants in the garden. This material oxidizes rapidly upon exposure to the air and must be reapplied every two or three days.

Repellents on Bush or Tree Fruits

Heavy spraying of deciduous fruit trees during the dormant season with lime sulfur, bordeaux mixture, a thick whitewash, and other common spray ingredients to prevent the eating of buds by house finches has been reported effective in some instances. Field investigations, however, indicate that often the birds avoided the sprayed trees for only a brief time or moved into adjacent trees that were not sprayed.

Frightening Devices

Frightening devices to combat bird depredations are limited only by the ingenuity of those suffering the damage. Some devices have proved generally effective; others have been successful locally. They must be continuously and persistently operated if they are to succeed.

Frightening devices may be used to combat bird attack upon seedings, young plants, plants in later stages, ripening vegetable crops, and ripening small bush or tree fruits. They may be separated into two classes: noise makers and devices, which through appearance or motion deter the birds from entering the garden.

Noise Makers

Depending on the location of the garden, a wide variety of noise makers can be employed. Shooting blank shotgun shells may serve to discourage birds in suburban or rural areas, but where neighbors live close by, the noise of these shells may arouse antagonism. Firecrackers, when obtainable, can be used for the same purpose.

Tin cans containing a few pebbles, or bells, suspended on cords from stakes at intervals through the garden or in the fruit trees or bushes may be shaken by cords extending from nearby vantage points. It is necessary to operate such devices repeatedly during the first few days after their installation, until the birds have become wary, and to move them from place to place in the garden so that the birds do not become accustomed to them.

There is available on the commercial market an automatic carbide exploder which proves quite effective in preventing bird attack in many locations. Operating very economically, this machine explodes periodically with a report similar to that of a shotgun, which prevents its use in gardens in closely settled residential districts; its cost, however, is so high that its use is usually practicable only in permanent truck gardens of one to three acres.

Devices Based on Movement or Appearance

Scarecrows to prevent crop damage are as old as cultivation itself. Results vary with the bird concerned and with local conditions. The more human the appearance of the scarecrow, the more effective it may be. It should be moved about every day or two. Attach to it streamers of cloth or paper that will flutter in the wind or strips of tin that will reflect the sunlight.

The traveler in the California vegetable-growing districts will see acres of fields covered with white cloth streamers waving from cords. This method is called flagging. It can be used in small gardens and is often effective in driving away sparrows as well as horned larks. To install such a system, drive stakes at the ends of the garden rows, and stretch heavy cords from stake to stake at 18 to 20 inches above the ground. Cut streamers from light-colored cloth, heavy butcher's paper, waxed paper, newspaper, or any other similar material. These should be about 2 inches wide by 15 to 18 inches long. Tie them to the cords at about 20-inch intervals so that the lower ends will barely clear the ground. Strips of shiny tin, tin can lids, pieces of mirror, or other types of reflectors can be added to the 'flags,' and the light reflecting from these will increase the effectiveness of the whole assembly.

If the gardener will connect the cords in the garden with a long cord extending to the house, an outbuilding, or other vantage point, he can assist during periods of little breeze by occasionally jerking the cord and causing the entire assembly of flags to move. The effectiveness of the flagging method is largely dependent on repeated motion of the flags. In field practice most of the cloth and paper flags that have been used have been white: in a few instances black paper flags were effective.

Additional Suggestions

In order to be of the greatest possible service to the Victory Gardener, a number of additional suggestions for protecting gardens against attack by birds are offered. These have been reported in the literature or have been obtained in conversations with gardeners. Some seem to offer good prospects of success and may well be experimented with where conditions for their use appear favorable, but none of them have been officially observed or their alleged success substantiated.

Repellents

An article on protecting Victory Gardens that appeared in the Seattle (Wash.) Daily News on April 8, 1943, sponsored by an official Seattle Victory Garden Committee, stated that naphthalene flakes sprinkled generously along the rows of germinating plantlets would prevent attack by pheasants and quail.

Frequent applications would be necessary as rainfall, watering or exposure to the air destroys the potency of the naphthalene flakes in a few days. To avoid possible damage to plants, it seems advisable that the flakes should not actually touch any plants, and that a small-scale test be made before using the material on a large garden.

Numbers of substances have been reported locally as effective in repelling birds, but they may seriously affect the soil or kill the plants they touch. Among these are kerosene, creosote compounds including sheep dip, asphaltic and carbolineum compounds, and crude petroleum. They may be tested locally by saturating sawdust with the substance and sprinkling it thinly, close to but not directly, in the row of plants, taking care that none touches the plants.

Noise-makers

Almost everyone has seen some youngster fasten a piece of thin veneer or cardboard to the frame of a bicycle so that it strikes every spoke as the wheels turn. The same principle may be utilized in keeping birds uneasy and wary in the garden. Wind wings made from discarded large tin cans may be fastened to a discarded bicycle wheel mounted on a short pipe above the garden, and the veneer or cardboard striker mounted so that the wind striking the tin wind wings causes the wheel to turn and the striker clicks on every spoke of the wheel. With cloth or paper flags attached to the wheel, motion as well as noise is obtained. Using the same principle, mount a piece of veneer, tin, or cardboard in such position that it is struck lightly on every turn of the propeller of a home-made windmill or weather vane.

Common low-priced door bells operated on dry-cell batteries may prove effective when a small Victory Garden is closely adjacent to the house; set up the bell on a short stake in the garden and run the wires into the house with the push-button inside. Push the button occasionally when birds are in the garden. Ordinary small bells operated by pulling cords have proved effective and the doorbells should be just as successful.

Scarecrows

Many gardeners assert that a mounted hawk, owl, or crow, with wings outspread, suspended over the garden so that the mounted bird will sway about in the breeze, is effective in frightening away birds; it should be moved from place to place daily. Others say that a painted wooden or tin silhouette of a cat moved about in the garden will cause the birds to stay away. Still others report the effectiveness of black oilcloth cut to resemble a snake.

During 1942 rotogravure sections of many newspapers carried illustrations of a mechanical scarecrow reported to be very effective in protecting a Portland, Oregon, truck garden. This machine consisted of a small boxlike body set on a stake several inches above the ground in the garden; arms wearing gloves extended from either side of the box body, and from the top protruded a lifelike head complete to hat. Operated by electricity, the robot scarecrow waved its arms and shook its head, and was said to have effectively protected the garden. Ingenious gardeners may well be encouraged by this example and devise other mechanical bird frighteners.

Poisoning

Poisoned baits for birds should never be used in small backyard gardens or vacant lots within any municipality or thickly settled community; most municipalities and some States have laws against such use. Poisons should be employed only in sparsely inhabited suburban or rural districts, and in situations where less destructive methods have proved inadequate to protect valuable crops. They should also be used only where careful attention can be given and where skilled supervisory advice is locally available.

The Fish and Wildlife Service will suggest procedure for poisoning injurious birds upon request by responsible agencies or individuals upon a showing that proper conditions for its use prevail and that other methods of crop protection have failed.

COMMENTS

The basic objective should be to insure adequate protection to home gardens and to small fruit plantings at reasonable expenditure of money and time, and with the least possible destruction of bird life, especially of those species that normally are beneficial. This requires that frightening or repelling methods should be used wherever they are likely to be successful and that covers and other protective devices should be used when the cost is not unreasonable.

Several of the methods mentioned require materials that are under wartime priorities. Where garden damage is severe, local agricultural agencies may be able to cooperate in obtaining the priorities necessary to procure these materials. Use second-hand or waste materials whenever available.

Some States and most municipalities have laws regulating the use of poisons, and most municipalities prohibit the discharge of firearms without permit. Investigate local laws and ordinances relative to the use of poisons, firearms, and traps before acting for the gardener individually is responsible in case the method of garden protection used is locally prohibited or if local enmities are aroused and legal action should result.

Know your birds; the habits of the different species of birds are entirely different, and the gardener must know what bird he seeks to keep out of his garden before he can expect to apply the proper method of control. Most birds are beneficial in the garden, destroying numbers of insects.

Where such game species as pheasants or quail are concerned, consult the nearest State game warden. Federal permits for the control of the protected species may be obtained by applying through the local State warden, or to the United States game management agent in your State. As mentioned before, among the species that injure gardens, only the English sparrow, starling, blue jay, and crow are unprotected by Federal Law.

The Fish and Wildlife Service will gladly give any further assistance possible in instances where local conditions demand marked change of suggested methods. In writing about such cases, be sure to describe in detail the local situation.

CONTROLLING INJURIOUS MAMMALS

Many home gardens may be attacked by rabbits or moles, or by pocket gophers, mice, ground squirrels, or other small rodents. The Fish and Wildlife Service has issued publications dealing with the control of each of these pests and these may be obtained upon request. Most county agents or farm advisors have this information available and are glad to offer assistance adapted to local conditions.

PUBLICATIONS ON CONTROL OF INJURIOUS BIRDS

Copies of the following processed leaflets of the Fish and Wildlife Service can be obtained on request to the Fish and Wildlife Service, United States Department of the Interior, Merchandise Mart, Chicago 54, Ill.:

Protecting grain crops from damage by wild fowl. By E.R. Kalmbach, Biologist, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-13, 7 pp. August 1935.

A cage trap useful in the control of white-necked ravens. By Shaler E. Aldous, Biologist, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-27, 5 pp., illus. Revised, April 1938.

Crow damage to fall grain crops in Oklahoma in 1937. By Ralph H. Imler and E. R. Kalmbach, Biologists, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-123, 15 pp. January 1939.

Protecting field crops from waterfowl damage by means of reflectors and revolving beacons. By F. M. Uhler, Biologist, Division of Wildlife Research, and Stephen Croech, Game Management Agent, Division of Game Management. Wildlife Leaflet BS-149, 6 pp., illus. November 1939.

Suggestions for combating objectionable roosts of birds, with special reference to those of starlings. By E. R. Kalmbach, Biologist, Division of Wildlife Research. Wildlife Leaflet 172, 19 pp., illus. December 1940.

Blackbirds and grain crops in the eastern United States. By E. R. Kalmbach, Biologist, Division of Wildlife Research. Wildlife Leaflet 220, 5 pp., June, 1942.

Protecting victory gardens from animal pests. Wildlife Leaflet 236, 6 pp., illus. April 1943.

Local control of magpies through destroying nests and roosts and through trapping. By E. R. Kalmbach, Biologist. Wildlife Leaflet 252, 4 pp., illus. April 1944.

Control of vagrant domestic pigeons. Wildlife Leaflet 254, 4 pp. May 1944.

Electric beacons used to frighten wild ducks from grainfields. By Ralph H. Imler, Biologist. Wildlife Leaflet 256, 5 pp., illus. June 1944.

The following bulletins may be obtained from the Government Printing Office, Washington 25, D. C., at the prices listed:

The crow and its relation to agriculture. By E. R. Kalmbach, Biologist. United States Department of Agriculture Farmers' Bulletin 1102, 22 pp., illus. Revised 1939. 5 cents.

Economic status of the English sparrow in the United States. By E. R. Kalmbach, Biologist. United States Department of Agriculture Technical Bulletin 711, 66 pp., illus. June 1940. 15 cents.

The following publications may be obtained from the issuing agencies:

Protecting cherries from birds. By H. A. Cardinell. Circular Bulletin 160, 22 pp., illus. 1937. Michigan Agricultural Experiment Station, East Lansing, Mich.

Damage to corn by redwings. By H. A. Cardinell and D. W. Hayne. Quarterly Bulletin 27, part 1, 9 pp., illus. 1944. Michigan Agricultural Experiment Station, East Lansing, Mich.

Bird control in victory gardens. (Processed leaflet.) County Agricultural Commissioner, P. O. Box 104, Modesto, Calif.

Suggestions for reducing crop damage by wildlife. Station Circular 148. Agricultural Experiment Station, Oregon State College, Corvallis, Oreg.

Control the starlings. By J. Buchanan. Extension Circular No. 87. Ontario Department of Agriculture, Toronto, Canada. April 1944.